

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of

Amendment of Parts 1, 21, 73, 74 and 101 of  
the Commission's Rules to Facilitate the  
Provision of Fixed and Other Advanced  
Services in the 2150-2162 and 2500-2690  
MHz Bands

Transforming the 2.5 GHz Band

WT Docket No. 18-120

**COMMENTS  
OF KINGS COUNTY SUPERINTENDENT OF SCHOOLS**

Kings County Superintendent of Schools ("KCSS") submits these comments in response to the referenced Notice of Proposed Rulemaking ("*Notice*"). KCSS urges the Commission, prior to any process it adopts in this proceeding for issuing expanded or new EBS licenses, to grant KCSS's pending applications and associated waiver requests seeking licenses to cover its A and C group EBS facilities currently deployed and operating under Special Temporary Authorizations. These facilities are providing critical and otherwise unavailable wireless broadband service to schools, school employees, students (at school and at home), their families and others throughout Kings County, California, and it is plainly in the public interest for the Commission to ensure that the service on these channels can continue.

**Background**

KCSS is the official name for the Kings County Office of Education, one of fifty-eight county offices of education in the State of California. KCSS provides technical assistance, curriculum and instructional support, staff development, financial support services, and oversight

to all fourteen Kings County public school districts. KCSS plays a leadership role in delivering quality education to more than 27,000 K-12 public school students in the county. In addition, KCSS is itself an accredited educational institution, providing direct instruction to students by operating three schools: one alternative school for Court students and two special education schools providing for pupils ages 0 to 22 with special needs throughout Kings County.

KCSS is licensee of EBS station WNC785 on the B channel group, with a GSA that covers the eastern-most portion of Kings County. KCSS also utilizes capacity on the G channel group channels of EBS station WNC790 within the same portion of Kings County under a cooperative arrangement with neighboring Tulare County Superintendent of Schools, which is the licensee of WNC790.

In 2011, KCSS applied for an STA to operate the same B and G group EBS channels within the rest of Kings County. The Commission granted STA for WQOE779 on the B group and WQOE778 on the G group on September 2, 2011. KCSS thereupon constructed and operated a wireless broadband system on the B and G groups within the combined GSAs of the four stations (WNC785, WNC790, WQOE778 and WQOE779) in Kings County. Subsequently, in 2016, KCSS sought, and the Commission granted, regular licenses for the B and G groups previously operated under STA, under call signs WQYR562 and WQYR563. KCSS filed substantial service showings for those licenses on March 24, 2017.

Facing severe network congestion issues, in April 2017, KCSS applied for STAs to operate the A, C and D group EBS channels within the portions of Kings County that were not within the GSA of any other licensed co-channel EBS station. The Commission granted STAs for WQZH200 on the A group, WQZH202 on the C group, and WQZH201 on the D group on May 11, 2017. KCSS thereupon constructed and has now extended its wireless broadband

system to also operate on the A and C groups.<sup>1</sup> On October 3, 2017, KCSS filed applications for regular licenses for the A and C group operations (ULS File Nos. 000794911 and 0007949112), accompanied by appropriate requests for waiver of FCC rules, including the current freeze on filing of new EBS station applications. Those applications remain pending.

### **History of Deployment and Operation of Wireless Network in Kings County**

Beginning in 2011, KCSS deployed a WiMAX system operating on the B and G groups. However, the WiMAX system has since been converted to LTE technology, permitting KCSS to take advantage of that technology's inherent ability to serve more users and more density of use with greater throughput capabilities, to facilitate the use of web-based applications and cloud services along with other educational applications that are bandwidth intensive. The system originally consisted of seven (7) cell sites – two in Corcoran, and one each in Kit Carson, Island, Lemoore, Avenal and Kettleman City. KCSS has since expanded the system to include eleven (11) additional cell sites, including six (6) sites in Hanford, the largest community in the county, and sites in Armona, Central, Lakeside, Stratford and a second site in Lemoore. Altogether, school districts in the county are now providing wireless broadband service to about 4,000 students over the system.

The LTE service is also available to the faculty and staff of all the school districts in the county. KCSS allows individuals and families to connect to the LTE service even if their school district has not yet provided the service to its students. As of today, there are 1500 such private accounts. KCSS continues to receive requests to provide LTE service to more students, faculty, and staff including college students taking on-line courses.

With the recent expansion of deployments, virtually all of the populated areas of Kings

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<sup>1</sup> As of this filing, KCSS has not yet deployed on the D group under its STA.

County can be served. Subject to the licensing of the A and C channels and the resulting resolution of capacity limitations described below, the system will be able to provide wireless broadband service to virtually all of the 27,000 public school students and 5500 faculty and staff in the county, and their families.

When partnering with a school district, KCSS provides mobile router devices to the district. The district distributes the mobile router to students along with a computing device, such as a tablet or laptop, to connect to the mobile router. The mobile router connects to the LTE network and provides WIFI access to multiple wireless devices, thus allowing other family members to gain Internet access along with the student. In many areas of Kings County, this may be the only Internet access available in the home.

Many of these students come from families on the lower end of the socio-economic spectrum who are very challenged to obtain alternative Internet access services, which in many cases are limited even if they exist at all. Most of these families earn their livelihood as seasonal agricultural farm workers. For example, Corcoran Unified School District has a student population of 3495 students, of which 2910 participate in the National School Lunch Program (84%). Reef-Sunset Unified School District has a student enrollment of 2631 students with 2391 participating (91%).

Notably, pursuant to the A and C group STA grants, KCSS has successfully deployed those channel groups to its Avenal site. This has alleviated capacity issue that plagued service in that community. KCSS now has five (5) 15 MHz sectors on the Avenal tower, providing Internet access to more than 1,000 students and the community.

In addition, KCSS has deployed the A and C groups throughout Kings County. The network redesign utilizes a two-carrier configuration per sector, which effectively doubles the

LTE network capacity. With the additional spectrum, KCSS is able to allow other school districts to join its LTE network. The granting of permanent licenses for the A and C group EBS channels would therefore be invaluable to rural Kings County students, staff, and communities.

### **Successful Educational and Community Outcomes**

Since the wireless broadband system has been deployed, KCSS and individual school districts have learned that students quickly become comfortable with the technology and very motivated to use it in their studies. KCSS has examined a number of metrics comparing educational outcomes prior to and following the provision of devices and broadband service. The amazing educational success of the system has previously been shared with the Commission, but for example, in one year following the provision of devices by the Corcoran School District, student suspensions decreased by 60%, middle school honor rolls increased by 30%, and students enrolled in concurrent college courses, and passing those courses, doubled. Other metrics reflect similar educational advances, including significant improvements in student reading and math performance.

In addition to highly favorable student outcomes attributable to the use of devices and broadband service over the KCSS system, students have been encouraged to bring their devices home and share service with their families. Corcoran Unified School District has developed an app for parents to interface with school administration, staff, and resources. A dynamic calendar allows families to plan school/personal activities, reducing potential conflicts. The notifications portion of the app allows school administration to dynamically push out important/critical event news to parents. The app also provides other resources, such as survey/test results, secure individual student information for parent access, school board agendas, mobile school items payment options, and school lunch menus.

The benefits of the system are also now extending further into the schools' communities. In view of the stunning success generated by use of the system by the Reef-Sunset Unified School District, the city of Avenal is now partnering with the district to make KCSS's LTE service available to the entire community, with the goal of providing Internet access to every home. In addition, the city recently dedicated the Avenal Technology Center, a facility intended to help members of the community develop new skills and increase opportunities for success, such as e-commerce, online banking, online job searches, and online resume creation and submission. The city of Lemoore is also reaping the benefits of the KCSS LTE network. The local Police Activities League is utilizing the LTE service to provide internet service to their after school programs.

Overall, the deployment of KCSS's wireless broadband system in Kings County has resulted in improved student academic performance, increased student participation in school and school activities, decreased disciplinary incidents, increased parent/student/school collaboration, and increased rural community participation and collaboration.

### **Network Congestion**

Unfortunately, the KCSS system was becoming a victim of its own success. As usage of high bandwidth applications including video streaming and cloud-based services increased and the number of users increased, the system had become congested during peak usage hours. As a result, users began to experience loss of connections, the inability to connect to the network, and slow download speeds. Because of these issues, students had difficulty completing their homework assignments on a timely basis.

The capacity problem was greatest at Avenal, which caused the Reef-Sunset Unified School District to reconsider using the network as intended. Due to the density of its student

population located in a relatively small area nestled next to hills, the system without the A and C groups was not able to generate sufficient capacity to meet current demand, much less future demand. KCSS anticipated similar circumstances at each of its locations as more and more users used the system and their uses became more bandwidth intensive. Another of KCSS's biggest users, the Hanford Elementary School District (needing more than 4000 devices), began to question system capacity.

KCSS has consulted with its LTE vendor's RF engineering team about the problem. After careful study, performance reports, and on site drive testing, it was determined that the limitations causing the congestion in Avenal could not reasonably be mitigated by merely purchasing and deploying more equipment, but that adding more EBS channels to existing equipment would alleviate the limitations, achieve better throughput and more reliable service, and accommodate more users by maximizing the capacity available at each LTE transmission node. In fact, deployment of the A and C groups under the Commission's STA grants has successfully addressed these congestion issues. KCSS therefore urgently seeks to have the Commission issue regular authorizations for the A and C channels, which will enable KCSS to most effectively meet current and future wireless broadband demand throughout Kings County.

The Commission has previously waived the EBS licensing freeze in granting STAs and regular authorizations to KCSS to use the B and G group channels, and in granting STAs for KCSS to use the A, C and D group channels. The Commission concluded, most recently in a *Memorandum Opinion and Order* issued December 20, 2016 by the Broadband Division of the Wireless Telecommunications Bureau in File Nos. 0007432862 and 0007432863, that KCSS has demonstrated that continued application of the filing freeze and electronic filing requirement would be inequitable, unduly burdensome and contrary to the public interest. The Commission

also found that waiving the filing freeze would facilitate the provision of educational material through a broadband network in unserved and underserved area of the county, furthering the Commission's goal of providing all Americans with access to ubiquitous wireless broadband connections, regardless of their location.

KCSS urges that ample grounds exist for the Commission to reach the same conclusion with respect to the pending A and C group license applications.

**Conclusion**

For the foregoing reasons, KCSS urges the Commission, prior to any process it adopts in this proceeding for issuing expanded or new EBS licenses, to grant KCSS's pending applications and associated waiver requests seeking licenses to cover its A and C group EBS facilities currently deployed and operating under Special Temporary Authorizations.

Respectfully submitted,

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OF SCHOOLS

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